

WHAT IS CLAIMED IS:

1 1. For use in a wireless communications system, a
2 power amplification system for avoiding performance
3 degradation, system shutdown or damage comprising:

4 a power amplifier amplifying wireless signals to
5 be transmitted;

6 a voltage converter supplying power to the power
amplifier;

7 at least one monitoring unit detecting occurrence
8 of a predetermined data pattern within the wireless signals
9 to be transmitted, wherein the predetermined data pattern
10 is likely to cause an undesirable drop in an output voltage
11 from the voltage converter; and

12 at least one control unit lowering an output
13 power level of the power amplifier for a specified period
14 in response to occurrence of the predetermined data pattern
15 within the wireless signals to be transmitted.

1 2. The power amplification system as set forth in
2 Claim 1 wherein the predetermined data pattern further
3 comprises:

4 a data sequence within a single timeslot or data
5 packet; or

6 a combination of one or more data sequences
7 across successive timeslots or data packets.

3 3. The power amplification system as set forth in
Claim 2 wherein the at least one monitoring unit detects
the data sequence or the combination of one or more data
sequences.

4 4. The power amplification system as set forth in
Claim 1 wherein occurrence of the predetermined data
pattern is detected by:

4 a signal sequence; or

5 a signal sequence in combination with a voltage,
6 a current, or a combined voltage and current exceeding a
7 threshold either instantaneously or for a specified
8 duration.

1 5. The power amplification system as set forth in
2 Claim 4 wherein the at least one monitoring unit detects
3 the voltage, the current, or the combined voltage and
4 current.

5
1 6. The power amplification system as set forth in
2 Claim 1 wherein the at least one control unit lowers the
3 output power by a defined increment.

6
7 7. The power amplification system as set forth in
8 Claim 1 wherein the at least one control unit lowers the
9 output power by adjusting a power control reference
10 voltage.

11
1 8. The power amplification system as set forth in
2 Claim 1 further comprising:

3 a baseband modulator generating the wireless
4 signals to be transmitted; and

5 a transmission line-up unit controlling timing of
6 transmission of the wireless signals to be transmitted,

7 wherein the at least one monitoring unit and the at
8 least one control unit are each located in one or more of
9 the power amplifier, the voltage converter, the baseband
10 modulator, and the transmission line-up unit.

1 9. The power amplification system as set forth in
2 Claim 8 wherein more than one of the power amplifier, the
3 voltage converter, the baseband modulator, and the
4 transmission line-up unit include a monitoring unit or a
5 control unit.

1 10. The power amplification system as set forth in
2 Claim 1 wherein the power amplifier is specified for
3 average output power at a maximum power level rather than
4 absolute maximum peak power at the maximum power level.

1 11. A method of avoiding performance degradation,
2 system shutdown or damage in a power amplification system
3 comprising:

4 amplifying wireless signals to be transmitted
5 with a power amplifier;

6 supplying power to the power amplifier from a
7 voltage converter;

8 detecting, at least one monitoring unit,
9 occurrence of a predetermined data pattern within the
10 wireless signals to be transmitted, wherein the
11 predetermined data pattern is likely to cause an
12 undesirable drop in an output voltage from the voltage
13 converter; and

14 employing at least one control unit to lower an
15 output power level of the power amplifier for a specified
16 period in response to occurrence of the predetermined data
17 pattern within the wireless signals to be transmitted.

1 12. The method as set forth in Claim 11 wherein the
2 step of detecting occurrence of a predetermined data
3 pattern within the wireless signals to be transmitted
4 predetermined data pattern further comprises:

5 detecting a data sequence within a single
6 timeslot or data packet; or

7 detecting a combination of one or more data
8 sequences across successive timeslots or data packets.

13. The method as set forth in Claim 12 wherein the
steps of detecting the data sequence or detecting the
combination of one or more data sequences are performed by
the at least one monitoring unit.

14. The method as set forth in Claim 11 wherein the
2 step of detecting occurrence of a predetermined data
3 pattern within the wireless signals to be transmitted
4 predetermined data pattern further comprises:

5 detecting a signal sequence; or

6 detecting a signal sequence in combination with a
7 voltage, a current, or a combined voltage and current
8 exceeding a threshold either instantaneously or for a
9 specified duration.

1 15. The method as set forth in Claim 14 wherein the
2 step of detecting a signal sequence in combination with a
3 voltage, a current, or a combined voltage and current
4 exceeding a threshold either instantaneously or for a
5 specified duration is performed by the at least one
6 monitoring unit.

16. The method as set forth in Claim 11 wherein the
step of employing at least one control unit to lower an
output power level of the power amplifier for a specified
period in response to occurrence of the predetermined data
pattern within the wireless signals to be transmitted
further comprises:

lowering the output power by a defined increment.

1 17. The method as set forth in Claim 11 wherein the
2 step of employing at least one control unit to lower an
3 output power level of the power amplifier for a specified
4 period in response to occurrence of the predetermined data
5 pattern within the wireless signals to be transmitted
6 further comprises:

7 lowering the output power by adjusting a power
8 control reference voltage.

1 18. The method as set forth in Claim 11 further
2 comprising:

3 generating the wireless signals to be transmitted
4 with a baseband modulator; and

5 controlling timing of transmission of the
6 wireless signals to be transmitted with a transmission
7 line-up unit,

8 wherein the at least one monitoring unit and the
9 at least one control unit are each located in one or more
10 of the power amplifier, the voltage converter, the baseband
11 modulator, and the transmission line-up unit.

12 19. The method as set forth in Claim 18 wherein the
13 steps of detecting occurrence of a predetermined data
14 pattern within the wireless signals to be transmitted or
15 employing at least one control unit to lower an output
16 power level of the power amplifier for a specified period
17 in response to occurrence of the predetermined data pattern
18 within the wireless signals to be transmitted are performed
19 by more than one of the power amplifier, the voltage
20 converter, the baseband modulator, and the transmission
line-up unit.

20. The method as set forth in Claim 11 wherein the step of amplifying wireless signals to be transmitted with a power amplifier further comprises:

employing a power amplifier specified for average output power at a maximum power level rather than absolute maximum peak power at the maximum power level.